

Cancel claims 1-21.

Sub C1 >

22. (Amended) In an asymmetric communication system including a server, a plurality of clients, a shared first channel for sending packets from the server to the plurality of clients, a plurality of second channels for sending packets from the clients to the server, a [A] method of operating one of the clients [a client], the method comprising the steps of:

sending [periodic] operability indication messages on one of the second channels; [during an active state;

receiving a poll message, and requesting channel connection]

receiving a first plurality of packets sent from the server, by receiving the first plurality of packets from the shared channel at a first speed, each of the first plurality of packets including an internetwork header with the internetwork address associated with the one of the clients;

sending a second plurality of packets to the server, by sending the second plurality of packets over the one of the second channels at a speed lower than the first speed, each of the second plurality of packets including an internetwork header with the internetwork address associated with the one of the clients;

receiving a message; and

sending [periodic] operability indication messages on another one of the second channels [channel], the other one of the second channels [channel] being determined by the message received in the [receiving] step of receiving a message.

Cancel claims 23-25.

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Please add the following new claims:

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~~A~~26. The method of claim ~~22~~ wherein the plurality of second channels includes a telephone network, and the step of sending a second plurality of packets includes:
sending the second plurality of packets over the telephone network.

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The method of claim ~~22~~ wherein the first channel includes a cable network, and the plurality of second channels includes the cable network, each of the plurality of second channels having respective frequencies in the cable network, and the step of sending a second plurality of packets includes sending includes:

sending the second plurality of packets over the cable network.

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The method of claim ~~22~~ wherein the first channel includes a wireless broadcast network, and the step of sending the first plurality of packets includes:

sending the first plurality of packets over the wireless broadcast network.

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The method of claim ~~22~~ wherein the first channel includes a wireless broadcast network, and the plurality of second channels include the wireless broadcast network, the step of sending the second plurality of packets includes:

sending the second plurality of packets over the wireless broadcast network.

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30. The method of claim ~~22~~ wherein the first channel includes a satellite broadcast

network, and the plurality of second channels include a telephone network, and the step of a second plurality of packets sending includes:

sending the signal over the telephone network.

31. The method of claim 22 wherein each of the plurality of second channels have respective frequencies in the cable network, and the step of sending a second plurality of packets includes transmitting on one of the respective frequencies.

32. A client for an asymmetric communication system including a server, a shared first channel for sending packets from the server, the shared first channel, a plurality of second channels for sending packets to the server, the client comprising:

a receiver that receives a first plurality of packets sent from the server, by receiving the first plurality of packets, by receiving the first plurality of packets from the shared channel at a first speed, each of the first plurality of packets including an internetwork header with the internetwork address associated with the client; and

a transmitter that transmits periodic operability indication messages on one of the second channels and, responsive to a received message received by the client, subsequently transmits periodic operability indication messages on another one of the second channels, the other one of the second channels being determined by the received message, and transmits a second plurality of packets to the server, by sending the second plurality of packets over the one of the second channels at a speed lower than the first speed, each of the second plurality of packets including an internetwork header with the internetwork address associated with the client.

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~~33~~. The client of claim ~~32~~⁸ wherein the plurality of second channels includes a telephone network, and the transmitter transmits the second plurality of packets over the telephone network.

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~~34~~. The client of claim ~~32~~⁸ wherein the first channel includes a cable network, and the plurality of second channels includes the cable network, each of the plurality of second channels having respective frequencies in the cable network, and the transmitter transmits the second plurality of packets over the cable network.

¹¹
~~35~~. The client of claim ~~32~~⁸ wherein the first channel includes a wireless broadcast network, and the receiver receives from the wireless broadcast network.

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~~36~~. The client of claim ~~32~~⁸ wherein the first channel includes a wireless broadcast network, and the plurality of second channels include the wireless broadcast network, and the transmitter transmits the second plurality of packets over the wireless broadcast network.

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~~37~~. The client of claim ~~32~~⁸ wherein the first channel includes a satellite broadcast network, and the plurality of second channels include a telephone network, and the transmitter transmits over the telephone network.

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~~38~~. The client of claim ~~32~~⁸ wherein the first channel includes a cable network, and the

plurality of second channels includes the cable network, each of the plurality of second channels having respective frequencies in the cable network, and the transmitter transmits the second plurality of packets over the cable network.

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39. A two way asymmetric communication system for transferring information between a host and a remote device that runs a layer protocol, the communication system comprising:

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- a shared medium,
- at least one downstream channel in the shared medium,
- plural lower speed upstream channels in the share medium,
- a remote interface associated with the remote device for receiving high speed downstream information from the host over the downstream channel and for sending lower speed return information over at least one of the lower speed upstream channels,
- a control system common to both upstream and downstream channels that is co-located with a headend facility of a data distribution network for managing access to the upstream channels by the remote interfaces and for enabling the transfer of information over the downstream and upstream channels, the control system including
- a channel switcher that switches channels transparently to the remote device.

Sub C4

40. A communication system according to claim 39 wherein the control system further includes

- a detector that detects a quality characteristic of a communication channel,
- wherein the channel switcher switches to another communication channel depending on

the detected quality characteristic.

41. A communication system according to claim 40 wherein the channel switcher comprises circuitry configured for switching to another communication channel if the detected quality characteristic deviates sufficiently from a norm.

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Cont.

42. A communication system according to claim 41 wherein the quality characteristic is one of time from last operability indication, signal-to-noise ratio, error frequency and busy signal.

43. A communication system according to claim 39 wherein the shared medium comprises one of a hybrid fiber coaxial cable, an over-the-air broadcast medium, a cellular broadcast medium, a direct satellite broadcast medium, a CATV broadcast and an rf radio broadcast and wherein the upstream channel is one of a selected lower speed upstream channel located on the shared medium, a lower speed telephone return line, a lower speed cellular return channel, an over-the-air rf transmission and a point-to-point electromagnetic transmission.

44. A communication system according to claim 39, wherein the channel switcher comprises:

equipment for determining the availability of at least one channel; and

a channel selector for selecting as the other channel a suitable channel from the available channels.

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45. A communication system according to claim 44, wherein the channel selector operates to select channels based on suitability factors of the available channels, the factors including at least one of channel quality, type of service required, operating characteristics of a client associated with the communication channel and configuration restrictions.

46. A communication system according to claim 44, wherein the channel selector comprises:

a sender that sends a message to a remote interface associated with the communication channel, the message requesting the remote interface to switch to the other channel; and
a receiver for receiving a response from the remote interface on the other channel.

47. A communication system as in claim 39 further including a detector that detects a characteristic of an upstream channel, the detector operating at an upstream location.

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48. A two way asymmetric network communication system for transferring information between a server and a plurality of remote devices for supporting server-client communication, each remote device running a layer protocol, the communication system comprising:

a high speed downstream channel in a shared medium,
a lower speed upstream channel,

plural remote interfaces associated with respective remote devices for receiving high speed downstream information from the server over the downstream channel and for sending lower speed return information over the lower speed upstream channel,

a network management system common to both upstream and downstream channels and being located at a central facility for simultaneously effecting control of information transfers over the downstream and upstream channels, the network management system including a switcher that switches channels transparently to the remote devices.

49. A communication system according to claim 48 wherein the network management system further includes

a detector that detects a quality characteristic of a communication channel, wherein the switcher switches to another communication channel based on the detected quality characteristics.

50. A device according to claim 48 wherein the switcher comprises circuitry configured for

switching to another channel if a detected quality characteristics deviates sufficiently from a reference.

51. A device according to claim 48 wherein the switching device comprises: circuitry configured for switching to another communication channel based on sufficient deviation of detected quality characteristics from corresponding predetermined norms.

52. The device according to claim 48 wherein the quality characteristics are selected from time from last operability indication, signal-to-noise ratio, error frequency and busy signal.

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53. A method of providing two way asymmetric network communication between a host and a remote device that runs a layer protocol, and supports client-server communication with the host, the method comprising:

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- providing a shared medium,
- providing a high speed downstream channel and plural associated lower speed upstream channels wherein the downstream channel conveys data packets from the host to the remote device over the shared medium at a rate that is higher than a rate of conveyance of data packets from the remote device to the host over the shared medium in a lower speed upstream channel,
- providing an interface associated with the remote device for receiving high speed downstream data packets originating from the host over the downstream channel and for sending lower speed data packets destined for the host over one of the lower speed upstream channels,
- controlling at least one of switching and routing functions of both the downstream and upstream channels according to at least one of a request for access to a channel and a request to transfer data initiated by at least one of the host and remote device, and
- in response to the controlling step, transferring at least one of high speed data packets originating from the host according to a high speed downstream protocol and lower speed data packets originating from the remote device to the host according to a lower speed upstream protocol, such that the downstream and upstream protocols are transparent to the remote device.